

WHAT IS CLAIMED IS:

1. A method comprising:
  - analyzing an input audio signal to determine a power spectral density profile of the input audio signal;
  - 5        comparing the power spectral density profile of the input audio signal with at least one template profile; and
  - selectively attenuating frequency bands of the input audio signal based on the comparing.
2. The method of claim 1, wherein the comparing includes comparing the power  
10        spectral density profile of the input audio signal with a plurality of template profiles.
3. The method of claim 2, wherein the plurality of template profiles includes three template profiles.
4. The method of claim 2, wherein the selectively attenuating includes selecting one of the plurality of template profiles based on the comparing.
- 15    5. The method of claim 4, wherein the selective attenuating further includes determining a respective attenuation factor for each of the frequency bands of the input audio signal based on a distance, for the respective frequency band, between the power spectral density profile and the selected template profile.

6. The method of claim 4, wherein the selecting of one of the plurality of template profiles is based on respective distances between the template profiles and the power spectral density profile of the input audio signal.
7. The method of claim 6, wherein the selecting of one of the plurality of template profiles is based on respective weighted distances between the template profiles and the power spectral density profile of the input audio signal.
8. The method of claim 1, further comprising:  
    using the input audio signal to drive a speaker after the selectively attenuating of the frequency bands of the input audio signal.
9. A method comprising:  
    analyzing an input audio signal to determine a power spectral density profile of the input audio signal;  
    adjusting the power spectral density profile to form an adjusted power spectral density profile;  
    comparing the adjusted power spectral density profile with at least one template profile; and  
    selectively attenuating frequency bands of the input audio signal on the basis of the comparing.
10. The method of claim 9, wherein the adjusting is based on a signal received via a microphone.

11. The method of claim 10, wherein the adjusting is based on an estimated external gain between a speaker and the microphone.
12. The method of claim 9, wherein the comparing includes comparing the adjusted power spectral density profile with a plurality of template profiles.
- 5 13. The method of claim 12, wherein the plurality of template profiles includes three template profiles.
14. The method of claim 12, wherein the selectively attenuating includes selecting one of the plurality of template profiles based on the comparing.
15. The method of claim 14, wherein the selectively attenuating further includes  
10 determining a respective attenuation factor for each of the frequency bands of the input audio signals based on a distance, for the respective frequency band, between the adjusted power spectral density profile and the selected template profile.
16. The method of claim 14, wherein the selecting of one of the plurality of template profiles is based on respective distances between the template profiles and the adjusted  
15 power spectral density profile.
17. The method of claim 16, wherein the selecting of one of the plurality of template profiles is based on respective weighted distances between the template profiles and the adjusted power spectral density profile.

18. The method of claim 9, further comprising:

using the input audio signal to drive a speaker after the selectively attenuating of the frequency bands of the input audio signal.

19. An apparatus comprising:

5 a processor to couple to a speaker; and

a memory coupled to the processor;

wherein the processor is to:

analyze an input audio signal to determine a power spectral density profile of the input audio signal;

10 compare the power spectral density profile of the input audio signal with at least one template profile residing in the memory; and

selectively attenuate frequency bands of the input audio signal on the basis of the comparison of the power spectral density profile with the at least one template profile.

15 20. The apparatus of claim 19, wherein the processor is to compare the power spectral density profile of the input audio signal with a plurality of template profiles residing in the memory.

21. The apparatus of claim 20, wherein the plurality of template profiles residing in the memory includes three template profiles.

22. The apparatus of claim 20, wherein the processor is to select one of the plurality of template profiles based on the comparison of the power spectral density profile of the input audio signal with the plurality of template profiles.

23. The apparatus of claim 22, wherein the processor is to determine a respective  
5 attenuation factor for each of the frequency bands of the input audio signal based on a distance, for the respective frequency band, between the power spectral density profile and the selected template profile.

24. The apparatus of claim 22, wherein the processor is to select one of the plurality of template profiles based on respective distances between the template profiles and the  
10 power spectral density profile of the input audio signal.

25. The apparatus of claim 24, wherein the processor is to select one of the plurality of template profiles based on respective weighted distances between the template profiles and the power spectral density profile of the input audio signal.

26. The apparatus of claim 19, wherein the processor is to apply the input audio signal to  
15 a speaker after the selective attenuating of the frequency bands of the input audio signal.

27. An apparatus comprising:

a processor to couple to a speaker;

a microphone coupled to the processor; and

a memory coupled to the processor;

20 wherein the processor is programmed to:

receive an input audio signal;  
analyze the input audio signal to determine a power spectral density  
profile of the input audio signal;  
adjust the power spectral density profile to form an adjusted power  
5 spectral density profile;  
compare the adjusted power spectral density profile of the input audio  
signal with at least one template profile residing in the memory; and  
selectively attenuate frequency bands of the input audio signal based on  
the comparison of the adjusted power spectral density profile with the at least one  
10 template profile.

28. The apparatus of claim 27, wherein the processor is to adjust the power spectral  
density profile based on a signal received via the microphone.

29. The apparatus of claim 28, wherein the processor is to adjust the power spectral  
density profile based on an estimated external gain between the speaker and the  
15 microphone.

30. The apparatus of claim 27, wherein the processor is to compare the adjusted power  
spectral density profile of the input audio signal with a plurality of template profiles  
residing in the memory.

31. The apparatus of claim 30, wherein the plurality of template profiles residing in the  
20 memory includes three template profiles.

32. The apparatus of claim 30, wherein the processor is to select one of the plurality of template profiles based on the comparison of the adjusted power spectral density profile of the input audio signal with the plurality of template profiles.

5 33. The apparatus of claim 32, wherein the processor is to determine a respective attenuation factor for each of the frequency bands of the input audio signal based on a distance, for the respective frequency band, between the adjusted power spectral density profile and the selected template profile.

34. The apparatus of claim 32, wherein the processor is to select one of the plurality of template profiles based on respective distances between the template profiles and the  
10 adjusted power spectral density profile of the input audio signal.

35. The apparatus of claim 34, wherein the processor is to select one of the plurality of template profiles based on respective weighted distances between the template profiles and the adjusted power spectral density profile of the input audio signal.

36. The apparatus of claim 27, wherein the processor is to apply the input audio signal to  
15 a speaker after the selective attenuating of the frequency bands of the input audio signal.

37. An apparatus comprising:

a storage medium having stored thereon instructions that when executed by a machine result in the following:

analyzing an input audio signal to determine a power spectral density  
20 profile of the input audio signal;

comparing the power spectral density profile of the input audio signal with at least one template profile; and

selectively attenuating frequency bands of the input audio signal based on the comparing.

- 5     38. The apparatus of claim 37, wherein the comparing includes comparing the power spectral density profile of the input audio signal with a plurality of template profiles.

39. The apparatus of claim 38, wherein the selectively attenuating includes selecting one of the plurality of template profiles based on the comparing.

40. An apparatus comprising:

- 10             a storage medium having stored thereon instructions that when executed by a machine result in the following:

analyzing an input audio signal to determine a power spectral density profile of the input audio signal;

- 15             adjusting the power spectral density profile to form an adjusted power spectral density profile;

comparing the adjusted power spectral density profile with at least one template profile; and

selectively attenuating frequency bands of the input audio signal on the basis of the comparing.

- 20     41. The apparatus of claim 40, wherein the adjusting is based on a signal received via a microphone.



42. The apparatus of claim 41, wherein the adjusting is based on an estimated external gain between a speaker and the microphone.